

Message Text

UNCLASSIFIED

PAGE 01 STATE 099692
ORIGIN ACDA-10

INFO OCT-01 ISO-00 OES-07 /018 R

DRAFTED BY ACDA/NTB:R. SPEIER:NRH
APPROVED BY ACDA/NTB:C. VAN DOREN
-----031639Z 111879 /43

O 031617Z MAY 77
FM SECSTATE WASHDC
TO ADMIRAL THOMAS D DAVIES HOTEL OSTERREICHISCHER
HOF A5020 SALZBURG AUSTRIA PH 72541 TELEX 63590

UNCLAS STATE 099692

E.O. 11652: N/A

TAGS: N/A

SUBJECT: TALKING PAPER "BASIC ASPECTS OF NUCLEAR POWER
ECONOMICS"

1. PAPER HAS BEEN CLEARED BY GIAMBUSO WITH
CHANGES IN THREE PLACES: (A) SEAWATER EXTRACTION;
(B) URANIUM PRICE TO MAKE LMFBR ECONOMICAL; AND
(C) TRANSMISSION COST FOR LMFBR. REVISED TEXT IS AS
FOLLOWS:

2. THE ATTACHED TABLE SHOWS REPRESENTATIVE FIGURES FOR
THE COST OF EACH COMPONENT OF NUCLEAR POWER, AS A PERCENT
OF THE DELIVERED COST OF ELECTRICITY. THESE NUMBERS WILL
CHANGE SLIGHTLY BUT NOT SIGNIFICANTLY WITH REASONABLE
VARIATIONS IN THE ASSUMPTIONS.

3. THE MOST FUNDAMENTAL OBSERVATION IS THAT FUEL COSTS ARE
ONLY TEN PERCENT OF THE DELIVERED ELECTRICITY COST. THE
MAJOR COSTS ARE THE TRANSMISSION AND DISTRIBUTION COSTS FOR
THE ELECTRICITY AND INTEREST AND AMORTIZATION OF CAPITAL
UNCLASSIFIED

UNCLASSIFIED

PAGE 02 STATE 099692

COSTS. VARIATIONS IN THE COST OF NUCLEAR FUEL LEAD ONLY TO
SMALL EFFECTS ON THE COST OF DELIVERED ELECTRICITY.

4. MOST TECHNOLOGIES POSING PROLIFERATION HAZARDS ARE IN-
TENDED TO SAVE A FRACTION OF THIS (RELATIVELY SMALL)
NUCLEAR FUEL COST. THESE TECHNOLOGIES HAVE ALSO BEEN
JUSTIFIED AS PROTECTION AGAINST URANIUM SCARCITY, BUT

"SCARCITY" REFLECTS ITSELF AS AN INCREASED COST FOR MINING LOWER GRADES OF URANIUM--AGAIN, A QUESTION OF THE ECONOMICS OF NUCLEAR FUEL.

5. SPECIFIC IMPLICATIONS ARE AS FOLLOWS:

A. FOR LWRS

(1) THE COST OF UNFABRICATED FUEL IS ONLY ABOUT TEN PERCENT OF THE COST OF DELIVERED ELECTRICITY; THE COST OF URANIUM AT PRESENT PRICES IS ONLY ABOUT FIVE PERCENT OF DELIVERED ELECTRICITY COST.

(2) IF URANIUM PRICES ROSE TO THE 100 DOLLAR/LB RANGE, AT WHICH ERDA ESTIMATES THAT THE US HAS MORE THAN 5 MILLION TONS OF ADDITIONAL KNOWN RESOURCES, THEN--ALLOWING FOR APPROPRIATE ADJUSTMENTS IN THE OPERATIONS OF THE ENRICHMENT PLANTS--THE DELIVERED COST OF ELECTRICITY WOULD RISE BY SOME TEN PERCENT.

(3) IF URANIUM COULD BE OBTAINED AT A COST OF SEVERAL HUNDRED DOLLARS PER POUND, THE DELIVERED COST OF ELECTRICITY WOULD RISE BY SOME 50 PERCENT. SEAWATER IS AN ESSENTIALLY INFINITE SOURCE OF URANIUM, BUT THE COST OF EXTRACTION IS YET TO BE DETERMINED.

(4) IF LWR REPROCESSING AND RECYCLE WERE FREE AND IF THEY SAVED SOME 25 PERCENT OF URANIUM CONSUMPTION AND 18 PERCENT OF ENRICHMENT SERVICES (PER ERDA ESTIMATES), THEY UNCLASSIFIED

UNCLASSIFIED

PAGE 03 STATE 099692

WOULD REDUCE DELIVERED ELECTRICITY COSTS BY 2 PERCENT.

(5) ENRICHED URANIUM STOCKPILES AS A MEANS OF FUEL ASSURANCE WOULD ADD LITTLE TO THE COST OF DELIVERED ELECTRICITY, ESPECIALLY IF THEIR COST WERE SHARED BY MANY NATIONS.

B. FOR LMFBRs

(1) THE HIGHER CAPITAL COSTS ASSOCIATED WITH LMFBRs PLACE THEM AT AN ECONOMIC DISADVANTAGE COMPARED TO LWRS. URANIUM PRICES WOULD NEED TO RISE AT LEAST BY A FACTOR OF 2 ABOVE PRESENT LEVELS FOR LMFBRs TO BE COMPETITIVE WITH LWRS.

(2) THE LMFBR CAPITAL COSTS ARE STILL HIGHLY UNCERTAIN; UNTIL THEY ARE BETTER KNOWN, THE COMPARATIVE LMFBR/LW ECONOMICS WILL BE SPECULATIVE;

ILLUSTRATIVE (1) DELIVERED ELECTRICITY COSTS (PER KWH

WITH FIGURES NORMALIZED TO LWR 1.00)

-- LWR ONCE-THROUGH LMFBR

URANIUM (30 DOLLAR/LB)	.05	
ENRICHMENT (100 DOLLAR/SWU)	.05	.05(3)
O&M, FABRICATION, WASTE DISP.	.05	.05
CAPITAL	.35	.44-.53(4)
SUBTOTAL BUSBAR	.50	.54-.63
TRANSMISSION AND DISTRIBUTION	.50(2)	.50
TOTAL DELIVERED	1.00	1.04-1.13

(1) THESE FRACTIONAL BREAKOUTS ARE TYPICAL, WITHIN A FEW PERCENT, OF 1977 FIGURES GENERATED BY ERDA, THE FEDERAL ENERGY ADMINISTRATION, AND THE FORD FOUNDATION NUCLEAR POWER STUDY GROUP. THE NUMBERS VARY SLIGHTLY WITH PLANT LOCATION, DISTANCE TO LOAD CENTER, TAILS ASSAY, PRECISE COST ESTIMATES, AND INTEREST RATES.

UNCLASSIFIED

UNCLASSIFIED

PAGE 04 STATE 099692

(2) STANDARD RULE OF THUMB FOR THE INDUSTRY.

(3) REPRESENTATIVE COSTS FOR INITIAL FUEL LOAD AND REPROCESSING.

(4) BASED ON INDUSTRY ESTIMATES REPORTED IN 1977 TO ERDA OF COMMERCIAL LMFBR CAPITAL COSTS 25 PERCENT TO 50 PERCENT GREATER THAN LWR CAPITAL COSTS.
VANCE

UNCLASSIFIED

NNN

Message Attributes

Automatic Decaptioning: X
Capture Date: 01-Jan-1994 12:00:00 am
Channel Indicators: n/a
Current Classification: UNCLASSIFIED
Concepts: NUCLEAR ENERGY, TEXT, BRIEFING MATERIALS, ECONOMIC PROGRAMS
Control Number: n/a
Copy: SINGLE
Sent Date: 03-May-1977 12:00:00 am
Decaption Date: 01-Jan-1960 12:00:00 am
Decaption Note:
Disposition Action: n/a
Disposition Approved on Date:
Disposition Case Number: n/a
Disposition Comment:
Disposition Date: 01-Jan-1960 12:00:00 am
Disposition Event:
Disposition History: n/a
Disposition Reason:
Disposition Remarks:
Document Number: 1977STATE099692
Document Source: CORE
Document Unique ID: 00
Drafter: R. SPEIER:NRH
Enclosure: n/a
Executive Order: N/A
Errors: N/A
Expiration:
Film Number: D770154-1185
Format: TEL
From: STATE
Handling Restrictions: n/a
Image Path:
ISecure: 1
Legacy Key: link1977/newtext/t19770599/aaaadhln.tel
Line Count: 148
Litigation Code IDs:
Litigation Codes:
Litigation History:
Locator: TEXT ON-LINE, ON MICROFILM
Message ID: 5dcc309b-c288-dd11-92da-001cc4696bcc
Office: ORIGIN ACDA
Original Classification: UNCLASSIFIED
Original Handling Restrictions: n/a
Original Previous Classification: n/a
Original Previous Handling Restrictions: n/a
Page Count: 3
Previous Channel Indicators: n/a
Previous Classification: n/a
Previous Handling Restrictions: n/a
Reference: n/a
Retention: 0
Review Action: RELEASED, APPROVED
Review Content Flags:
Review Date: 19-Oct-2004 12:00:00 am
Review Event:
Review Exemptions: n/a
Review Media Identifier:
Review Release Date: n/a
Review Release Event: n/a
Review Transfer Date:
Review Withdrawn Fields: n/a
SAS ID: 2653425
Secure: OPEN
Status: NATIVE
Subject: TALKING PAPER \"BASIC ASPECTS OF NUCLEAR POWER ECONOMICS\"
TAGS: PARM
To: DAVIES THOMAS D
Type: TE
vdkgvwkey: odbc://SAS/SAS.dbo.SAS_Docs/5dcc309b-c288-dd11-92da-001cc4696bcc
Review Markings:
Margaret P. Grafeld
Declassified/Released
US Department of State
EO Systematic Review
22 May 2009
Markings: Margaret P. Grafeld Declassified/Released US Department of State EO Systematic Review 22 May 2009